CLAIM(S)

What is claimed is :

1. A process for purifying a hydrofluoropropane comprising:
contacting a first mixture comprising a hydrofluoropropane, an olefinic impurity and a saturated chlorinated impurity with hydrogen and hydrogen fluoride concurrently in the presence of a bifunctional catalyst, whereby said olefinic impurity is converted to at least one first saturated derivative selected from the group consisting of a saturated hydrogenated derivative of said olefinic impurity and a saturated hydrofluorinated derivative of said olefinic impurity, and whereby said saturated chlorinated impurity is converted to at least one second saturated derivative selected from the group consisting of a saturated hydrodechlorinated derivative of said saturated chlorinated impurity and a saturated fluorinated derivative of said saturated chlorinated impurity, to form a second mixture comprising hydrofluoropropane substantially free of said olefinic impurity and said saturated chlorinated impurity, and
recovering said second mixture.

2. The process of claim 1 further comprising distilling said second mixture thereby separating said hydrofluoropropane from at least one of said first saturated derivative and said second saturated derivative, and recovering said hydrofluoropropane substantially free of at least one of said first saturated derivative and said second saturated derivative.

3. The process of claim 1 wherein: said hydrofluoropropane is represented by the formula $C_3H_mF_{8-m}$, wherein m is an integer from 1 to 7; said olefinic impurity is represented by the formula $C_nH_pCl_qF_r$, wherein n is an integer from 2 to 4, p is an integer from 0 to 8, q is an integer from 0 to 2, r is an integer from 0 to 8, and $p + q + r = 2n$; and said saturated chlorinated impurity is represented by the formula $C_sH_tCl_uF_v$, wherein s is an integer from 1 to 4, t is an integer from 0 to 9, u is an integer from 1 to 3, v is an integer from 0 to 9, and $t + u + v = 2s + 2$.

4. The process of claim 1 wherein said contacting is carried out in the vapor phase at a temperature of from about 100°C to about 400°C.

5. The process of claim 1 wherein said bifunctional catalyst comprises a transition metal supported on a fluorination catalyst, wherein said transition metal is selected from the group consisting of palladium, platinum and gold.

6. The process of claim 5 wherein said fluorination catalyst is selected from the group consisting of carbon, fluorinated aluminum(III) oxide, and fluorinated chromium(III) oxide.

7. The process of claim 1 wherein said bifunctional catalyst comprises an alloy of gold and palladium supported on carbon.

8. The process of claim 1 wherein said second mixture contains less than about 500 ppm of each of said olefinic impurity and said saturated chlorinated impurity.

9. The process of claim 1 wherein said second mixture contains less than about 100 ppm of each of said olefinic impurity and said saturated chlorinated impurity.

10. A process for reducing the concentration of olefinic impurity and saturated chlorinated impurity in a first mixture comprising hydrofluoropropane, olefinic impurity and saturated chlorinated impurity, comprising:

contacting said first mixture with hydrogen and hydrogen fluoride concurrently in the presence of a bifunctional catalyst, whereby at least a portion of said olefinic impurity is converted to at least one first saturated derivative selected from the group consisting of a saturated hydrogenated derivative of said olefinic impurity and a saturated hydrofluorinated derivative of said olefinic impurity, and whereby at least a portion of said saturated chlorinated impurity is converted to at least one second saturated derivative selected from the group consisting of a saturated hydrodechlorinated derivative of said saturated chlorinated impurity and a saturated fluorinated derivative of said saturated chlorinated impurity, to form a second mixture comprising hydrofluoropropane wherein the concentration of said olefinic impurity and said saturated chlorinated impurity is reduced from the concentration of said olefinic impurity and said saturated chlorinated impurity contained in said first mixture, and

recovering said second mixture.